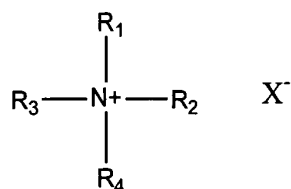


1. (original) A composition for releasing nucleic acids from a biological sample comprising: at least one cationic surfactant, at least one protease, and a buffer.
2. (original) The composition of claim 1, wherein the at least one cationic surfactant is protonated under the conditions used.
3. (original) The composition of claim 1, wherein the at least one cationic surfactant has the structure:



wherein  $R_1$ ,  $R_2$ ,  $R_3$ , and  $R_4$  are independently selected from the group consisting of: -H; an alkyl group comprising between one and twenty carbon atoms; and an aryl group comprising between six to twenty-six carbon atoms.

4. (original) The composition of claim 3, wherein the cationic surfactant is an alkyltrimethyl ammonium salt, where  $R_1$ ,  $R_2$ , and  $R_3$  are methyl groups, and  $R_4$  is an alkyl group comprising 6, 8, 10, 12, 14, 16, or 18 carbon atoms.
5. (original) The composition of claim 4, where the cation of the alkyltrimethyl ammonium salt is selected from the group consisting of cetyltrimethylammonium, hexadecyltrimethylammonium, tetradecyltrimethylammonium, dodecyltrimethylammonium, and lauryl trimethylammonium.

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6. (original) The composition of claim 4, where the anion ( $X^-$ ) of the alkyltrimethyl ammonium salt is selected from the group including bromide, chloride, iodide, hydroxide, nitrate, sulfate, phosphate, formate, acetate, propionate, oxalate, malonate, succinate, or citrate.
7. (original) The composition of claim 3, wherein the at least one cationic surfactant is a benzyldimethyl-*n*-alkylammonium salt, where  $R_1$  and  $R_2$  are methyl groups,  $R_3$  is an aryl group comprising six carbon atoms, and  $R_4$  is an alkyl group comprising 6, 8, 10, 12, 14, 16, or 18 carbon atoms.
8. (original) The composition of claim 7, where the anion of the benzyldimethyl-*n*-alkylammonium salt is selected from the group consisting of bromide, chloride, iodide, hydroxide, nitrate, sulfate, phosphate, formate, acetate, propionate, oxalate, malonate, succinate, and citrate.
9. (original) The composition of claim 1, wherein the at least one protease is selected from the group consisting of subtilisins, subtilases, and alkaline serine proteases.
10. (original) The composition of claim 9, wherein the at least one protease is selected from the group consisting of Proteinase K, Proteinase R, Proteinase T, Subtilisin DY, an alkaline serine protease from *Streptomyces griseus* or *Bacillus licheniformis*, Dispase, subtilisin Carlsberg, subtilopeptidase A, and thermolysin.
11. (original) The composition of claim 9, wherein the protease is Proteinase K.

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12. (original) The composition of claim 9, wherein the protease is thermolysin or a thermostable protease.
13. (original) The composition of claim 12, wherein the protease is from *Thermus* Rt41A or *Bacillus thermoproteolyticus rokko*.
14. (original) The composition of claim 1, further comprising calcium chloride.
15. (original) The composition of claim 1, wherein the buffer maintains the pH between pH 7 and pH 9.
16. (original) The composition of claim 1, wherein the buffer maintains the pH between pH 5 and pH 7.
17. (original) The composition of claim 1, further comprising a ribonuclease inhibitor.
18. (original) The composition of claim 17, where in the at least one ribonuclease inhibitor comprises aurintricarboxylic acid, vanadylate ribonucleoside complexes, phenylglyoxal, p-hydroxyphenylglyoxal, polyamines, spermidine, 9-aminoacridine, iodoacetate, bentonite, poly[2'-O-(2,4-dinitrophenyl)]poly(adenylic acid), zinc sulfate, bromopyruvic acid, formamide, copper, or zinc.
19. (original) The composition of claim 18, wherein the at least one ribonuclease inhibitor comprises aurintricarboxylic acid.

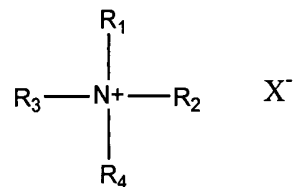
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20. (original) The composition of claim 1, wherein the cationic surfactant is cetyltrimethylammonium bromide (CTAB), cetyltrimethylammonium chloride (CTACl), hexadecyltrimethylammonium bromide, or hexadecyltrimethylammonium chloride; the protease is Proteinase K; the buffer maintains the pH between pH 5 and pH 7; and further comprising aurintricarboxylic acid.
21. (original) The composition of claim 20, further comprising at least one solubilizing agent for enhancing the solubility or permeability of the sample.
22. (original) The composition of claim 21, wherein the solubilizing agent is 1-methyl 2 pyrrolidinone, N-methyl pyrrolidinone, pyrrolidinone, dimethylformamide, or dimethylsulfoxide.
23. (original) The composition of claim 1, further comprising a deoxyribonuclease inhibitor.
24. (original) The composition of claim 23, wherein the at least one deoxyribonuclease inhibitor comprises a divalent cation chelator.
25. (original) The composition of claim 24, wherein the chelator is EDTA, EGTA, of DPTA.

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26-87. (withdrawn)

88. (new) A composition for releasing nucleic acids from a biological sample comprising: at least one cationic surfactant, at least one protease, a buffer, and the biological sample.
89. (new) The composition of claim 88, wherein the biological sample is whole tissue.
90. (new) The composition of claim 89, wherein the at least one cationic surfactant is protonated under the conditions used.
91. (new) The composition of claim 89, wherein the at least one cationic surfactant has the structure:



wherein  $R_1$ ,  $R_2$ ,  $R_3$ , and  $R_4$  are independently selected from the group consisting of:  $-H$ ; an alkyl group comprising between one and twenty carbon atoms; and an aryl group comprising between six to twenty-six carbon atoms.

92. (new) The composition of claim 91, wherein the cationic surfactant is an alkyltrimethyl ammonium salt, where  $R_1$ ,  $R_2$ , and  $R_3$  are methyl groups, and  $R_4$  is an alkyl group comprising 6, 8, 10, 12, 14, 16, or 18 carbon atoms.

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93. (new) The composition of claim 92, where the cation of the alkyltrimethyl ammonium salt is selected from the group consisting of cetyltrimethylammonium, hexadecyltrimethylammonium, tetradecyltrimethylammonium, dodecyltrimethylammonium, and lauryl trimethylammonium.
94. (new) The composition of claim 92, where the anion ( $X^-$ ) of the alkyltrimethyl ammonium salt is selected from the group including bromide, chloride, iodide, hydroxide, nitrate, sulfate, phosphate, formate, acetate, propionate, oxalate, malonate, succinate, or citrate.
95. (new) The composition of claim 91, wherein the at least one cationic surfactant is a benzyldimethyl-*n*-alkylammonium salt, where  $R_1$  and  $R_2$  are methyl groups,  $R_3$  is an aryl group comprising six carbon atoms, and  $R_4$  is an alkyl group comprising 6, 8, 10, 12, 14, 16, or 18 carbon atoms.
96. (new) The composition of claim 95, where the anion of the benzyldimethyl-*n*-alkylammonium salt is selected from the group consisting of bromide, chloride, iodide, hydroxide, nitrate, sulfate, phosphate, formate, acetate, propionate, oxalate, malonate, succinate, and citrate.
97. (new) The composition of claim 89, wherein the at least one protease is selected from the group consisting of subtilisins, subtilases, and alkaline serine proteases.

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98. (new) The composition of claim 97, wherein the at least one protease is selected from the group consisting of Proteinase K, Proteinase R, Proteinase T, Subtilisin DY, an alkaline serine protease from *Streptomyces griseus* or *Bacillus licheniformis*, Dispase, subtilisin Carlsberg, subtilopeptidase A, and thermolysin.
99. (new) The composition of claim 97, wherein the protease is Proteinase K.
100. (new) The composition of claim 97, wherein the protease is thermolysin or a thermostable protease.
101. (new) The composition of claim 100, wherein the protease is from *Thermus* Rt41A or *Bacillus thermoproteolyticus rokko*.
102. (new) The composition of claim 89, further comprising calcium chloride.
103. (new) The composition of claim 89, wherein the buffer maintains the pH between pH 7 and pH 9.
104. (new) The composition of claim 89, wherein the buffer maintains the pH between pH 5 and pH 7.
105. (new) The composition of claim 89, further comprising a ribonuclease inhibitor.

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106. (new) The composition of claim 105, where in the at least one ribonuclease inhibitor comprises aurintricarboxylic acid, vanadylate ribonucleoside complexes, phenylglyoxal, p-hydroxyphenylglyoxal, polyamines, spermidine, 9-aminoacridine, iodoacetate, bentonite, poly[2'-O-(2,4-dinitrophenyl)]poly(adenylic acid), zinc sulfate, bromopyruvic acid, formamide, copper, or zinc.
107. (new) The composition of claim 105, wherein the at least one ribonuclease inhibitor comprises aurintricarboxylic acid.
108. (new) The composition of claim 89, wherein the cationic surfactant is cetyltrimethylammonium bromide (CTAB), cetyltrimethylammonium chloride (CTACl), hexadecyltrimethylammonium bromide, or hexadecyltrimethylammonium chloride; the protease is Proteinase K; the buffer maintains the pH between pH 5 and pH 7; and further comprising aurintricarboxylic acid.
109. (new) The composition of claim 108, further comprising at least one solubilizing agent for enhancing the solubility or permeability of the sample.
110. (new) The composition of claim 109, wherein the solubilizing agent is 1-methyl 2-pyrrolidinone, N-methyl pyrrolidinone, pyrrolidinone, dimethylformamide, or dimethylsulfoxide.



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111. (new) The composition of claim 89, further comprising a deoxyribonuclease inhibitor.
112. (new) The composition of claim 111, wherein the at least one deoxyribonuclease inhibitor comprises a divalent cation chelator.
113. (new) The composition of claim 112, wherein the chelator is EDTA, EGTA, of DPTA.

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